

ther by contact or proximity with a Plutonic or volcanic endogenous rock of eruption,* or, what is more frequently the case, by a gaseous sublimation of substances† which accompany certain masses erupted in a hot, fluid condition.

Conglomerates; coarse or finely granular sandstones, or breccias composed of mechanically-divided masses of the three previous species.

These four modes of formation—by the emission of volcanic masses, as narrow lava streams; by the action of these masses on rocks previously hardened; by mechanical separation or chemical precipitation from liquids impregnated with carbonic acid; and, finally, by the cementation of disintegrated rocks of heterogeneous nature—are phenomena and formative processes which must merely be regarded as a faint reflection of that more energetic activity which must have characterized the chaotic condition of the earlier world under wholly different conditions of pressure and at a higher temperature, not only in the whole crust of the earth, but likewise in the more

* In a plan of the neighborhood of Tezcuco, Totonilco, and Moran (*Atlas Géographique et Physique*, pl. vii.), which I originally (1803) intended for a work which I never published, entitled *Pasigrafia Geognostica destinada al uso de los Jovenes del Colegio de Minería de Mexico*, I named (in 1832) the Plutonic and volcanic eruptive rocks *endogenous* (generated in the interior), and the sedimentary and flötz rocks *exogenous* (or generated externally on the surface of the earth). Pasigraphically, the former were designated by an arrow directed upward †, and the latter by the same symbol directed downward ‡. These signs have at least some advantage over the ascending lines, which in the older systems represent arbitrarily and ungracefully the horizontally ranged sedimentary strata, and their penetration through masses of basalt, porphyry, and syenite. The names proposed in the pasigraphico-geognostic plan were borrowed from De Candolle's nomenclature, in which *endogenous* is synonymous with monocotyledonous, and *exogenous* with dicotyledonous plants. Mohl's more accurate examination of vegetable tissues has, however, shown that the growth of monocotyledons from within, and dicotyledons from without, is not strictly and generally true for vegetable organisms (Link, *Elementa Philosophiæ Botaniciæ*, t. i., 1837, p. 287; Endlicher and Unger, *Grundzüge der Botanik*, 1843, s. 89; and Jussieu, *Traité de Botanique*, t. i., p. 85). The rocks which I have termed endogenous are characteristically distinguished by Lyell, in his *Principles of Geology*, 1833, vol. iii., p. 374, as "nether-formed" or "hypogene rocks."

† Compare Leop. von Buch, *Ueber Dolomit als Gebirgsart*, 1823, s. 36; and his remarks on the degree of fluidity to be ascribed to Plutonic rocks at the period of their eruption, as well as on the formation of gneiss from schist, through the action of granite and of the substances upheaved with it, to be found in the *Abhandl. der Akad. der Wissensch. zu Berlin* for the year 1842, s. 58 und 63, and in the *Jahrbuch für Wissenschaftliche Kritik*, 1840, s. 195.